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**RESPONSE TO U.S. EPA'S COMMENTS
WORKPLAN FOR THE SOUTH GROUNDWATER
CONTAMINATION PLUME REMOVAL ACTION
PART 2 - PUMPING AND DISCHARGE SYSTEM
PART 3 - INTERIM**

XX/XX/XX

**DOE-FMPC/USEPA
21
ENCLOSURE
OU5**

RESPONSE TO U.S. EPA's COMMENTS

1217

WORKPLAN FOR THE SOUTH GROUNDWATER CONTAMINATION PLUME REMOVAL ACTION
PART 2 - PUMPING AND DISCHARGE SYSTEM
PART 3 - INTERIM ADVANCED WASTEWATER TREATMENT SYSTEM

General Comments

1. Comment:

The work plan lacks the detail needed to describe all activities within the scope of the removal action.

Response:

The comment is too vague to warrant a specific response. It is assumed this refers to the operation and monitoring of the recovery well field. This will be supplied in the Operations and Maintenance (O&M) manual. A draft of the portion of the O&M manual addressing the operation of the well field will be supplied for EPA's review by September 1, 1991.

Action:

The activities associated with finalizing the well field's location and O&M manual have been shown in the Removal Action Schedules in Attachment I of the Work Plan.

2. Comment:

The work plan should provide for design of the response action and include plans and schedules for all design and pre-design tasks required to implement the removal action alternative under the Consent Agreement. The work plan should define the following items:

- The Design team
- Requirements for additional field data collection
- Requirements for treatability studies
- Schedule for completion of design
- Design criteria and assumptions
- Tentative treatment schemes

The work plan does not adequately discuss each of these elements.

Response:

- The design of the Part 2 well field and monitoring wells (with respect to location, depth, etc.) will be provided by ASI/IT. The design of the Part 2 groundwater discharge pipeline, transfer pump station, and proposed outfall pipeline which will replace the existing outfall will be provided by A. M. Kinney. The design of the Part 3 effort will be provided by Ralph M. Parsons Co.
- Requirements for additional field data collection required for operation of the well field will be delineated in the O&M manual.
- Treatability studies under Part 3 design are not needed. The treatability studies already completed for OU #5 combined with the operation and performance data obtained to date from the 10 gpm AWWT pilot plant treatment system have provided sufficient data to allow for the design of the IAWWT system.
- The schedule for completion of design for Part 2 and Part 3 is shown in Attachment I of the Work Plan. The design effort has been expanded to better represent the design of the Part 2 well field and monitoring wells.
- Design criteria and assumptions are essential in the design for this Removal Action and not necessarily essential to meet the requirements of a Work Plan.
- The preliminary design for the IAWWT, as discussed with OEPA on February 8, 1991, is being sent under separate cover to U.S. EPA and OEPA for information only. This design basis document includes criteria for the IAWWT design. A preliminary process flow diagram is provided in the Work Plan.

Action:

The Work Plan has been changed where appropriate.

The Design Basis Document for IAWWT, dated February 1991, is being sent to U.S. EPA and OEPA under a separate transmittal for information only. A preliminary process flow diagram has been included in the Work Plan.

SPECIFIC COMMENTS

3. Comment:

Section 2.2, Page 3, Paragraph 4: Explain where the alternative water supply was connected.

Response:

The original source of water for the private residence was from a well which had been identified as being contaminated. The resulting course of action was to install a new well into the aquifer at a depth identified as not being affected by uranium contamination and to supply the residence with a reverse osmosis unit for groundwater treatment.

Action:

The word "previously" has been removed and the "private residential well" has been revised to "private resident".

4. Comment:

Section 2.2, Page 4, Paragraph 1: Explain how the outfall pipe repair schedule will be integrated under this work plan.

Response:

As explained in the DOE letter (DOE-735-91) issued to U.S. EPA on February 15, 1991, entitled "Installation of a New Effluent Line and its Incorporation into the South Plume Removal Action", a new FMPC outfall pipeline will be constructed, as part of the Part 2, to replace the existing FMPC outfall pipeline. The existing FMPC outfall pipeline action will be abandoned and addressed in Operable Unit #3. Therefore, its repair or investigation schedule is no longer critical to this Removal Action.

Action:

The Work Plan has been modified to include the construction of the new outfall pipeline. A figure showing the new outfall pipeline has been added to the Work Plan.

5. Comment:

Section 2.4, Page 4, Paragraph (11): Clarify whether this is the same alternative water supply as is discussed in Section 2.2, Page 3, Paragraph 4.

Response:

See the response to Comment No. 3. The alternate water supply described in Section 2.2, Page 3, Paragraph 4, concerns a private residential well. The alternate water supplies mentioned here are for the two affected industrial users that are the subject of the Part 1 - Alternate Water Supply System Work Plan of the South Groundwater Contamination Plume Removal Action.

Action:

No change to the work plan is required.

6. Comment:

Section [2.4], Page 5, Paragraph 2: (1) This paragraph states that this work plan includes activities for Parts 2, 3, and 4. The front page of this work plan indicates only Parts 2 and 3. Explain this discrepancy. (2) Because the contaminated ground water will be pumped into manhole 177 (downstream of the NPDES monitoring station, manhole 175), explain whether additional sampling will be done at manhole 177 to verify compliance with National Pollutant Discharge Elimination System (NPDES) requirements. (3) Explain what measures are proposed to verify the removal efficiency of the Interim Waste Water Treatment (IAWWT) system.

Response:

- (1) This Work Plan addresses Part 2 and Part 3 of this Removal Action. Part 1 and Part 4 activities are mentioned in this Work Plan to complete the description of the remaining parts of the South Groundwater Contamination Plume Removal Action.
- (2) Section 5.2 of the Work Plan describes the additional sampling proposed as the result of Part 2 and Part 3 operation. No additional sampling is proposed downstream of manhole 175 at the groundwater discharge pipeline tie-in at a new manhole near manhole 176 (moved from manhole 177 as stated in the previous Work Plan submittal). The sampling proposed in Section 5.2 is deemed adequate to verify substantive compliance with NPDES requirements. Note that some changes to the monitored parameters have been made to address concerns discussed with OEPA at a February 8, 1991, meeting held at the OEPA Southwest district office.
- (3) Section 5.2 of the Work Plan describes IAWWT performance will be assessed by uranium analysis of its influent and effluent. Monitoring point 608 has been added to obtain the influent information needed to make this analysis.

Action:

- (1) The reference to Part 4 in this paragraph has been removed.
- (2&3) The Work Plan has been modified where appropriate to include the new outfall design and the added monitoring parameters. In addition, figures have been included to better illustrate the proposed monitoring points within the existing FMPC wastewater flow diagram and a table has been added to better clarify the parameters.
- (3) Additional monitoring point 608 has been added to assess uranium removal by the IAWWT.

7. Comment:

Section [2.4], Page 5, Paragraph 3: (1) Explain what criteria were used to size the IAWWT if it is not known which of the existing FMPC waste streams will be treated. (2) Verify whether the storm sewer lift station (SSLS) discharge rate is the same as the capacity at the IAWWT. (3) Explain what measures will be taken to prevent the 150-gpm IAWWT from flooding during heavy rain if the SSLS is to be disconnected. (4) Explain how the solids will be removed from SWRB if the backwash from the IAWWT will be discharged back to the SWRB inlet.

Response:

- (1) During the Dispute Resolution process for the South Plume EE/CA, the criteria for the design of the IAWWT was presented. To summarize, the criteria used to size the IAWWT was based upon the additional mass of uranium that would be discharged to the Great Miami River resulting from this Removal Action and from other Removal Actions. The amount of uranium added due to these Removal Actions has been estimated to be approximately 320 lbs U/yr as follows:

Contaminated Water Under FMPC Buildings	= 15 lbs U/yr
Waste Pit Area Run-off Control	= 135 lbs U/yr
<u>South Groundwater Contamination Plume</u>	<u>= 170 lbs U/yr</u>
TOTAL	= 320 lbs U/yr

The estimate of uranium from the South Groundwater Contamination Plume is for the third year of the South Plume Removal Action operation which coincides with when the AWWT comes on-line. The third year projection represents the greatest uranium quantity that will be experienced during the "interim" period. The mass of uranium is estimated to increase annually at a rate of approximately 40 lbs U/yr during operation of the South Plume Removal Action as described in the EE/CA. So that no additional uranium is discharged through the FMPC outfall line as a result of implementing the Removal Actions, the "interim" treatment system needs to be capable of removing a minimum of 320 lbs U/yr from the existing FMPC wastewater.

In determining the capacity of the "interim" treatment system, 1989 discharge data was used. The 1989 uranium discharge to the Great Miami River was 1862 lbs U/yr in a flow averaging 472 GPM. This equates to approximately 3.9 lbs U/yr/GPM (1862 lbs U/yr divided by 472 GPM equals 3.9 lbs U/yr/GPM). To remove a minimum of 320 lbs U/yr from the existing FMPC wastewater treatment system discharge, the IAWWT system would have an 82 GPM capacity (320 lbs U/yr divided by 3.9 lbs U/yr/GPM equals 82 GPM). To provide for a factor of safety, an IAWWT with a capacity of 150 GPM and the capability of reducing uranium concentrations in treated water to 20 parts per billion (ppb) was proposed. This 150 GPM treatment capacity will ensure no additional uranium mass will be discharged. The 150 GPM system proposed, in view of the above calculation, will remove over 500 lbs U/yr resulting in a net decrease to the present FMPC uranium discharge level. This 500 lbs decrease was an essential key to the dispute resolution when a maximum discharge level of 1700 lbs U/yr was agreed. As mentioned in previous documents to EPA (DOE letter, DOE-117-91 dated October 18, 1990), the FMPC would select a current wastestream(s) to achieve the agreed to criteria. The stream(s) chosen are the combined SSLS and SWRB discharges.

Presently, dry weather flow is pumped from the SSLS to manhole 175. When the pumping capacity of the SSLS is exceeded (during periods of rainfall), the excess stormwater flow bypasses the SSLS and continues to flow to the SWRB. With the implementation of Part 3, the normal operation of the SSLS will be discontinued.

- (2) As the flow to the IAWWT is from the combined SSLS and SWRB, the daily flow from the SSLS does not have to meet the 150 gpm treatment level. The operating plan of the SWRB will be modified to allow additional storage volume for dry weather flow to provide a 150 gpm supply for IAWWT treatment.
- (3) In the future, the normal SSLS flow will discharge to the SWRB. The flow to the IAWWT will be provided by the pumping of storm water from the SWRB. The capacity of the pump will be a nominal 150 gpm.
- (4) Current IAWWT design has eliminated sand filtration and therefore eliminated the need for backwashing. Replacing sand filtration is a series of disposable filters. After exceeding their useful life, the filters will be drummed, classified, and handled per FMPC procedures for low level radioactive waste.

Action:

The Work Plan has been modified where appropriate. A figure has been added to the Work Plan to demonstrate the amount of uranium that is projected from past data to be delivered to the IAWWT. A preliminary process flow diagram describing the IAWWT has been added to the Work Plan. The O&M manual will indicate the dry weather change in operation of the SSLS and SWRB as described above.

8. Comment:

Section [2.4], Page 5, Paragraph 4: Explain the need for a booster pump station. The ground-water well pumps can be sized to eliminate the need for a booster station.

Response:

The booster pump station has been renamed as the transfer pump station to better describe its intended purpose. Within the transfer pump station will be a 60,000 gallon tank into which the recovery wells will discharge. The groundwater pumped to this tank will become the supply for the transfer pumps. The flow from the transfer pumps will be regulated by a step-controlled throttling valve on the discharge of the transfer pumps header (or possibly a variable speed controller if there is a cost advantage). This can be seen in the Process and Instrumentation Diagram in the 50% design drawing package sent to U.S. EPA and OEPA on February 5, 1991. The throttling valve will be controlled to maintain a set water level in the tank.

The South Plume Removal Action Engineering Evaluation/Cost Analysis (EE/CA) planned for recovery wells with a combined pumping rate from 1500 gpm to a maximum of 2500 gpm. The exact recovery well flow will depend on actual well field conditions as will be explained in the forthcoming O&M manual. To be conservative, the maximum design flow rate from the recovery wells and therefore maximum design flow rate expected to and from the transfer pump station tank was set at 2500 gpm. As explained above, the actual flow rate from the transfer pumps will be controlled by either the partial closure of discharge valving, known as throttling, variable speed pump motors, or a combination of both. The end result is that the transfer pump station's pumps, electrical requirements, operating controls, and the groundwater discharge pipeline and the new FMPC outfall pipeline are being designed to handle Removal Action flow of 2500 gpm (in addition to other flows described in the Response to Comment No. 10), while the exact pumping rate will vary as necessary to meet the flow conditions from the well field pumping system and other remediation inflows to the groundwater discharge pipeline.

With this design approach, the recovery well system will only need to be manually balanced from the recovery wells to the transfer pump station's tank. Not only will balancing occur during start-up as the recovery well pumping rates are adjusted, but more importantly can occur if it is determined through monitoring well data that any of the recovery well flow rates need to be adjusted or if additional wells need to be installed, etc. in the future. Correspondingly, this flow rate modification would change the recovery well's operating point on the system characteristic curve describing the pipeline from the recovery wells to the tank. To minimize this change and therefore reducing the difficulty in the manual rebalancing of each recovery well, the pipeline connecting the recovery wells to the transfer pump station's tank will be oversized to reduce the affects of headloss.

An added advantage of the transfer pump station concerns the addition of flows resulting from future remediation recovery wells. These future flows, regulated by individual, automatically adjusted flow control valves, will probably be added to the groundwater discharge pipeline upstream of the transfer pump station. These additional flows will result in increased head requirements for the transfer pumps to overcome as demonstrated by the change in the groundwater discharge pipeline's system characteristic curve. By changing out the transfer pump impellers to a larger diameter, the new head requirements will be met (i.e. the transfer pump motors, starters, etc., are being sized for the future flow conditions listed in the Response to Comment No. 10 but the impellers installed for present Removal Action conditions).

Action:

No change to the Work Plan is required.

9. Comment:

Section [2.4], Page 5, Paragraph 5: [1] Explain how reduction of uranium discharge can be verified if the monitoring station (NPDES) is to remain at manhole 175. [2] In addition, some sampling of the influent to- and effluent from the IAWWT system must be done to verify removal efficiency. [3] Lastly, describe what will be done with the uranium removed from the waste streams?

Response:

- [1] As stated during the Dispute Resolution and in this Work Plan, by the implementation of the South Groundwater Removal Action, a mass of uranium will be removed from a portion of the existing FMPC wastewater stream discharge that will exceed the mass of uranium added to this discharge as the result of pumping from the leading edge of the South Plume. As is explained in Section 5.2, the mass of uranium discharged into the Great Miami River will be determined by adding the uranium discharge data acquired from the existing FMPC outfall pipeline at the NPDES monitoring point at Manhole 175 (NPDES point 001) and the new groundwater discharge pipeline at a new monitoring point designated as 003. This new monitoring point is being located upstream from the tie-in with the existing outfall pipeline (at a new manhole near existing manhole 176) in the groundwater discharge pipeline, but downstream of the IAWWT effluent tie-in.
- [2] See the Response to Comment No. 6.
- [3] Only Part 3 of the Removal Action will be concerned with the disposal of uranium as the result of wastewater treatment. The uranium removed will be disposed as a low level radioactive waste in accordance with existing FMPC procedures. The form of the waste

(i.e. left on the resin or concentrated in an eluate) has not yet been determined. The O&M manual will give details of the method finally chosen.

Action:

The Work Plan has been modified where appropriate.

10. Comment:

Section 2.5, Page 6, Paragraph 2: [1] Specify the capacity of the Advanced Wastewater Treatment (AWWT) facility. [2] Verify whether the existing discharge sewer is adequate to receive this flow as well as all the flow from the ground-water extraction wells.

Response:

- [1] Initially, the AWWT is being designed to treat 1100 gpm. It will be comprised of two separate treatment systems referred to as Phase I and Phase II. Phase I will have a 700 gpm treatment capacity for water collected at the SWRB (this will include the current SSLS flow). The 700 gpm treatment capacity includes the capacity addressed by the 150 gpm IAWWT. Phase II will have a 400 gpm treatment capacity for process wastewater including anticipated flows from CERCLA actions of Operable Units 1 through 4 (including Removal Action flows from the Waste Pit Perimeter Area Run-off Control, Plant 6 Perched Water, and other facility's perched water). The capacity of the AWWT Phase I and II is not adequate to treat the anticipated flows from either the South Plume Removal Action or the remediation of Operable Unit 5. However, when water from the SWRB is not available, provisions are being made to divert a portion of the South Plume water to Phase I for treatment (estimated to average 300+ gpm over a year's time). A future AWWT Phase III is envisioned for treatment of 6900 gpm, which includes an allowance for 5200 gpm from South Plume remediation plus an allowance for other groundwater collection at the FMPC site.
- [2] The proposed groundwater discharge pipeline (designed as a force main) and proposed new FMPC outfall pipeline (designed as a gravity sewer) will not only have the capacity to carry the 2500 gpm flow from the South Plume Removal Action (as explained in the Response to Comment No. 8) but also have the reserve capacity to handle other flows described in the following. The groundwater discharge pipeline will have the capacity to carry 5200 gpm to the AWWT tie-in chamber (see Figure 3 of the Work Plan) located near the SWRB. The AWWT tie-in chamber will provide for future diversion of 5200 gpm of South Plume groundwater to the AWWT for treatment in the Phase III operation. The effluent from the AWWT (1100 gpm from Phases I and II and 6900 gpm from future Phase III, totaling 8000 gpm) will be returned to the discharge pipeline at the AWWT tie-in chamber. From the AWWT tie-in chamber to a new manhole near existing Manhole 176, the discharge pipeline will have the capacity to carry the 8000 gpm

effluent. From the new manhole, the new FMPC outfall pipeline will have a minimum capacity of 8000 gpm. The design of the pipelines are based on the following anticipated flow information:

AWWT Phase I	= 700 gpm
AWWT Phase II	= 400 gpm
AWWT Phase III:	
a) South Plume Removal Action Wells	= 2500 gpm
b) South Plume Remediation Action Wells	= 2700 gpm
c) additional (33%) flow allowance	= 1700 gpm
New Outfall Pipeline Capacity	= 8000 gpm

Although the existing outfall pipeline has the capacity to receive the additional 1100 gpm flow from the AWWT, as stated in the Response for Comment No. 4, a new, larger outfall pipeline is planned which will also address future remediation plans.

Action:

No change to the Work Plan is required.

11. Comment:

Section 2.5, Page 6, Paragraph 3: [1] Explain the function of all proposed components, including the AWWT and booster pump station. [2] Specify the capacities of the AWWT, extraction wells, and future recovery wells. [3] Specify how all these components are to be integrated. [4] Verify whether existing facilities to be used, such as pipelines and tanks, are of adequate size to handle future flows and loads.

Response:

[1,2,3] See the Response to Comment Nos. 8 and 10.

[4] No existing facilities are presently envisioned to be used for the implementation of the South Plume Removal Action.

Action:

No change to the Work Plan is required.

12. Comment:

Section 2.5, Page 6, Paragraph 4: Scheduling conflicts may exist if flows are not known. If future flows will exceed the capacity of existing pipelines, shutdowns will be required. All design parameters should be specified.

Response:

See the Response to Comment No. 10 for the estimate of design flows. Note that an allowance has been made to address uncertainties in future flows.

Action:

The design parameters and assumptions have been presented where needed in the Work Plan to facilitate the explanation of any major component of the South Plume Removal Action.

13. Comment:

Section 3.1, Page 7, Paragraph (a): [1] Explain how the recovery well pumping rate will be controlled. [2] Furthermore, the option of handling the spent ion exchange resin should be specified, as it may require some design changes.

Response:

[1] See the Response to Comment No. 8.

[2] Operation of the IAWWT will include the disposal of spent ion exchange resin as a low level radioactive waste is explained in the Response to Comment No. 9.

Action:

The Work Plan has been modified where appropriate.

14. Comment:

Section 3.1, Page 7, Paragraph (b): Explain what criteria were used to determine whether existing outfall is of adequate size if the exact number of recovery wells required has not been determined.

Response:

See the Response to Comment Nos. 8 and 10.

Action:

No change to the Work Plan is required.

15. Comment:

Section 3.1, Page 7, Paragraph (c): U.S. EPA guidance on remedial design and remedial action (OSWER Directive 9355.0-4A) requires the following submittals:

- Preliminary design submittal (30 percent) which should include design criteria, the project delivery strategy, results of treatability studies and additional field sampling, preliminary plans and drawings, an outline of required specifications, and a preliminary construction schedule.
- Intermediate design submittal (65 percent).
- Pre-final/final design submittal (95/100 percent), which should include the final plans and specifications, operation and maintenance plan, field sampling plan, construction quality assurance plan, contingency plan, and construction cost estimate and schedule.

Although this is a removal action and not a remedial action, the work plan needs to describe in detail (1) the number of "definitive design documents" that will be prepared, (2) what will be included in each of these documents, (3) how complete (percentage) the design will be for each submittal. Also clarify if parts 2 and 3 will be addressed together or separately in these documents.

Response:

The contract with the A/E Firm for Part 2 requires 50%, 95/100% and Certified for Construction (CFC) drawings and specifications. The 50% drawings and specifications were sent to USEPA and OEPA for informational purposes on February 5, 1991, (DOE Letter, DOE-709-91).

The design submittals for Part 3 includes two separate packages. The first package is an equipment specification for the IAWWT system, which includes a design basis document at 20% design, weekly design team review meetings, 90% review, and CFC document. The second package is an integrated utilities design comprised of a 20% design basis document, 50%, 90%, and CFC document.

Action:

Those design documents will be submitted to USEPA and OEPA, for information only, when they become available. Therefore, they have not been included in the Removal Action schedules. The paragraph has been modified accordingly.

16. Section 3.1, Page 8, Paragraph (f): The schedule for Parts 2 and 3 does not include the required submittals to EPA (see comment to Section 3.1, Page 8, paragraph [e]). The schedule seems excessive given the simplicity of this project.

Response:

See the Response to Comment No. 15.

Action:

See Comment No. 15.

17. Comment:

Section 3.2, Page 8, Paragraph 1: This paragraph states that the location of the recovery wells has been selected; however, Section 3.1, Page 7, Paragraph (b) states that the exact number and location of the recovery wells will be established. Clarify this discrepancy.

Response:

Both statements were true. The general design parameters for the well field were set at the time of the Work Plan submittal. The number of the wells was to be four or five depending on whether the eastern most well would be installed initially with the other four Removal Action wells or in the future to address the groundwater model's prediction of a slower eastward flow components of the South Plume. The location was chosen because it was south of the plume's leading edge and near New Haven Road for easy accessibility.

However, as was discussed at the February 20, 1991, meeting with U.S. EPA and OEPA at the OEPA Southwest district offices, it is being investigated that the well field be moved north of New Haven Road to minimize its influence on the PRRS plume. Recent monitoring data has indicated that the leading edge of the uranium plume is not as far south as originally predicted by the EE/CA. Construction of the well field will be separated from the construction of the transfer pump station, groundwater discharge pipeline, and outfall pipeline so that these more time consuming construction items may proceed on a faster schedule.

Action:

The Work Plan has been modified to show the separation of the Part 2 project into two components: the transfer pump station and pipeline system; and the well field. This is discussed in Section 3.1, Paragraph (f). The critical design items required for relocation and O&M for the well field will be detailed on a revised schedule.

18. Comment:

Section 3.2, Page 8, Paragraph 2: Explain how the recovery well pumping rate will be controlled for each recovery well. Will this rate be varied during the removal action, or will it be constant?

Response:

See the Response to Comment No. 8.

Action:

No change to the Work Plan is required.

19. Comment:

Section 3.4, Page 9: Specify whether permanent easements will be required.

Response:

Permanent easements are required on property owned privately outside the FMPC property boundary. This includes an easement for the groundwater discharge pipeline and the recovery wells and pipeline discharging into the transfer pump station. DOE is planning to acquire a portion of property where the transfer pump station and its access road will be constructed. The new outfall pipeline will be constructed within an existing FMPC easement in place for the existing outfall pipeline.

Action:

No change to the Work Plan is required.

20. Comment:

Section 4.0, Page 9, Paragraph 1: Verify whether the existing outfall is adequate to handle the proposed and any future ground-water flows. Given that manhole 177 is downstream from the NPDES monitoring station, explain what measures will be taken to comply with NPDES permit requirements.

Response:

See Response to Comment Nos. 8, 9, and 10.

Action:

The Work Plan will be modified where appropriate.

21. Comment:

Section 4.0, Page 9, Paragraph (a): [1] Explain what type of throttling will be used to control the pumping rate. [2] Explain what criteria will be used to ensure that the top of the screen will be set below the ground-water surface.

Response:

[1] See the Response to Comment No. 8.

[2] Historical groundwater elevation data along with proposed additional groundwater modeling will determine the top of screen elevation.

Action:

[1] No change to the Work Plan is required.

[2] The Work Plan has been modified accordingly.

22. Comment:

Section 4.0, Page 9, Paragraph (b): Explain how this system will work. If all wells are to discharge into a common force main and each well is to be throttled to control the discharge rate from that well, this system will be very difficult to balance: any change made to one well's discharge will affect all other wells.

Response:

See the Response to Comment Nos. 8 and 10.

Action:

No change to the Work Plan is required.

23. Comment:

Section 4.0, Page 10, Paragraph (c): Explain the need for this booster station. Describe what type of booster station will be designed and what type of controls will be used to accommodate the variable flow from ground-water extraction wells.

Response:

See the Response to Comment No. 8.

Action:

No change to the Work Plan is required.

24. Comment:

Section 4.0, Page 10, Paragraph [e]: Specify the "sufficient quantity" of uranium that the IAWWT will remove.

Response:

The word "sufficient" has been removed.

Action:

The paragraph will be revised to state that the quantity of uranium from a portion of the existing FMPC wastewater discharge to be removed will allow the FMPC discharge level to be reduced to <1700 lbs U/year.

25. Comment:

Section 4.0, Page 10, Paragraph following (e): If the IAWWT will be operational before Part 2 operation (pumping and discharge system), explain how the performance acceptance testing of the entire system will be done before operation. Explain, in detail, what is included in this testing.

Response:

Section 4.0, was an error. It should have stated that the IAWWT will be operational when Part 2 comes on-line. However, Part 2 and Part 3 are independently operating systems, except for use of a common force main (the groundwater discharge pipeline) and outfall pipeline. Therefore, only the outfall pipeline and the portion of the groundwater discharge pipeline (from the IAWWT to the new manhole near existing manhole 176) must be completed and pressure tested before the IAWWT becomes operational. The required pressure testing will be detailed in the final design specifications. This is not deemed to be a difficult item needing any further explanation at this time. If the IAWWT is ready before Part 2 is complete (namely the well field, transfer pump station, and/or the portion of the groundwater discharge pipeline upstream from the IAWWT to the transfer pump station), it may be put in operation after the above pressure test is completed.

Action:

The Work Plan has been revised accordingly.

26. Comment:

Section 4.0, Page 10, Operation and Maintenance: The Operation and Maintenance Plan has to be submitted to U.S. EPA for approval with the pre-final/final design submittal.

Response:

A draft of the portion of the Operations and Maintenance manual for the Part 2 well field operation will be made available to U.S. EPA and OEPA by September 1, 1991. The Operations and Maintenance manual covering all aspects of the Removal Action will be provided to U.S. EPA and OEPA by November 1, 1991, as is indicated on the revised Removal Action schedule.

Action:

The Removal Action schedule (Attachment I of the Work Plan) has been revised to show dates for Operation and Maintenance plan submittals.

27. Comment:

Section 5.2, Page 11: NPDES monitoring should be conducted downstream from the last tie-in to the effluent pipeline. Total combined flow must be monitored.

Response:

See response to Comment No. 9.

Action:

The Work Plan has been modified per Comment No. 9.

28. Comment:

Attachment I: [1] Parts 2 and 3 schedules do not indicate the required 30-percent, 65-percent, and 95/100-percent submittals. The design period of 198 days for Part 2 seems excessive. [2] The easement procurement should start as soon as possible because it may delay construction. [3] Both schedules show simultaneous completion of Parts 2 and 3, which is inconsistent with the discussion in Section 4, Page 10. Explain this discrepancy.

[1] See the Response to Comment No. 15.

[2] The process for obtaining easements for the critical construction items (transfer pump station and groundwater discharge pipeline south of the FMPC's south property line) are moving ahead at the present time. The easement for the well field must be obtained by September 1, 1991, in order not to impact the project's schedule. However, easements for the well field will not begin to be obtained until the final location is determined.

[3] The discussion in Section 4 was in error. It should have stated that the IAWWT will be ready for operation when Part 2 is placed into operation.

Action:

The Removal Action schedules (Attachment I of the Work Plan) have been modified accordingly. The Removal Action schedule for Part 2 has been separated into two complimentary schedules: one for the transfer pump station and pipeline systems, the second for the well field.

29. Comment:

Attachment II -- Section 1.0, Page 1: The proposed 35 Pci/g activity level needs to be substantiated with measured isotopic ratios of uranium.

Response:

The build over criteria has been reevaluated and determined not to be applicable for this Removal Action. The position that has been adopted is that since remediation efforts can still be performed around the pipeline with minimal disturbance, no build over criteria is necessary. In addition, past historical data has identified minimal radiological or HSL concern in this area.

Action:

The Sampling and Analysis Plan has been revised.

30. Comment:

Attachment II -- Section 1.0, Page 1: This section should state the objective of the sampling to be conducted and then, present data quality objectives. In addition, build-over criteria should be specified for all contaminants.

Response:

The Sampling and Analysis Plan has been modified to clearly state the sampling objective. The FMPC considers all sampling associated with the construction phase of this Removal Action to be for screening purposes only.

Action:

The Sampling and Analysis Plan has been revised.

31. Comment:

Attachment II -- Section 1.0, Page 1, Paragraph 3: The sampling plan should specify the size of the grid and the method used to collect "statistically representative" soil samples.

Response:

The FMPC has determined that build over certification sampling is not required for this Removal Action.

Action:

The Sampling and Analysis Plan has been revised to reflect this position.

32. Comment:

Attachment II -- Section 1.0, Page 1, Paragraph 3: The work plan should state why only the upper 6 inches of soil will be sampled and whether any provision has been made for additional sampling if the build-over criteria are exceeded.

Response:

Soils in the non-suspect areas will only be evaluated by radiological field scans. The following triggers will be used in the suspect areas to direct samples being taken below the upper six inches during pre-excavation (build-over criteria for the removal action is not a concern):

- o HNU meter readings of minimum detectable activity above background for VOC HSLs;
- o Hand-held radiological instrument (GM and alpha scintillation) readings of minimum detectable activity above background radiation.

Action:

The Sampling and Analysis Plan has been revised to reflect this response.

33. Comment:

Attachment II -- Section 1.0, Page 1, Paragraph 4: Field screening techniques should also be used in selecting samples for "Full HSL" analysis.

Response:

Field screening techniques will be employed to direct the need for subsurface soil analysis for HSL in suspect area.

Action:

The Sampling and Analysis Plan has been revised accordingly.

34. Comment:

Attachment II -- Section 1.0, Page 2, Paragraph 1: The text refers to soil samples that will be collected and analyzed for hazardous substance list parameters; however, the table provides information for water samples. This discrepancy should be explained or corrected.

Response:

The table provided was in error.

Action:

This table will be removed. The sampling and preservation requirements for soil and sediment samples will be provided in the RI/FS QAPP Revision 3.

35. Comment:

Attachment II -- Section 1.0, Page 2, Paragraph 2: The work plan should specify the number of environmental monitoring verification samples and how these samples will be selected. The verification samples should be split samples and should be analyzed in both on- and off-site laboratories.

Response:

See the Response to Comment No. 29

Action:

See Comment No. 29

36. Comment:

Attachment II -- Section 2.0, Page 3, Paragraph 3: TCLP analysis could be conducted using the method specified in the final regulation (55 Fed. Reg. 26986).

Response:

TCLP methods specified in 55 Fed. Reg. 26986 will be used for TCLP analyses.

Action:

The Sampling and Analysis Plan has been revised.

37. Comment:

Attachment II -- Section 3.0, Page 3, Paragraph 4: Define EM-2-013.

Response:

EM-2-013 is the procedure number for the FMPC Procedures for On-Site Media Sampling.

Action:

The Sampling and Analysis Plan has been revised, Reference to EM-2-013 has been removed.

38. Comment:

Attachment IV -- Page 2, Paragraph 1: Note that discharge to navigable waterways is not the only discharge that requires an NPDES permit.

Response:

Agreed as per 40 CFR 122.2 definition of "waters of the United States".

Action:

The paragraph has been revised accordingly.